Multiple User Access for Coverages and Shapefiles

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ArcInfo™ 8.0.1 software provides multiuser data access to ArcInfo coverages, ESRI® shapefiles, ArcInfo LIBRARIAN™ layers, and ArcStorm™ layers. While the ArcInfo geodatabase and ArcStorm are designed as multiuser read–write databases, coverages and shapefiles are multiuser read and single-user write. Problems arise when one user attempts to read single-user write data while another user is writing to it. To resolve this problem, we have developed the ESRI lock manager to avoid conflicts by communicating which files are being read and which are being written to by ArcInfo, ArcView® GIS, and ArcSDE™ for Coverages software.

This document describes the strategies for maintaining data while accessing it in Workstation and Desktop ArcInfo using the ESRI lock manager. It will discuss administration strategies for ArcSDE for Coverages that will also help to maintain your data.

Single Versus Multiuser Data in Workstation ArcInfo

Single-user write data stores, such as coverages, shapefiles, and ArcInfo LIBRARIAN data, do not have mechanisms for protecting writes to the data from other users reading it in Workstation ArcInfo. If you are editing data stored in one of these formats, then no one else can read it including ArcSDE for Coverages. The consequences for attempting this vary from format to format and are outlined on the following page.

Coverages

Coverages can be modified in various ways, for example, using ARCEDIT™ software or the KILL and RENAME commands in ArcInfo software. Performing any of these operations on coverage data while it is actively being served by ArcSDE for Coverages (i.e., clients are connected to the server and reading the data) or accessed by Desktop ArcInfo will return the following results:

- **ARCEDIT**—A coverage can be modified in ARCEDIT while ArcSDE for Coverages or Desktop ArcInfo is reading it with no perceptible problems.

  WARNING!—However, if a SAVE command is issued while ArcSDE for Coverages or Desktop ArcInfo is reading the coverage, ARCEDIT will return a FATAL error, the SAVE will fail, and the coverage will probably be corrupted.

- **KILL**—If a coverage is killed (i.e., deleted) with the KILL command in ArcInfo while an ArcSDE for Coverages client is reading the data, the client application will return "Network I/O Error." The connection to the ArcSDE for Coverages server will be lost.

The KILL command will have executed correctly and the coverage will have been deleted, but the ArcSDE for Coverages layer that was pointing to the coverage is still registered with the server. If the client attempts to access the layer again, it will get an "Underlying DBMS Error," which is an ArcSDE for Coverages way of saying "unable to find that layer's data."

If you copy a new coverage to replace the coverage that you have just killed, and a client attempts to access the coverage while it is being copied, the client will get a "Network I/O Error." The connection to the ArcSDE for Coverages server will be lost.

■ **RENAME**—If you rename a coverage that is being accessed by ArcSDE for Coverages, you will get the same behavior as if you had deleted it with the KILL command.

Other coverage editing commands in Workstation ArcInfo will have similar consequences on ArcSDE for Coverages clients or Desktop ArcInfo applications that are accessing the data. Examples of these commands include ADDITEM and DROPITEM. Commands, such as COPY, LIST, and ARCLINES, that simply read coverage data can be used at the same time as the data is being served through ArcSDE for Coverages. The KILL, RENAME , GENERATE, RENODE, BUILD, and CLEAN commands are the only Workstation ArcInfo commands that automatically integrate locking. When using a local or global lock manager, these commands must be able to set a write lock in order to successfully complete. If you are using any other workstation command and plan to possibly access the data in Desktop ArcInfo simultaneously, you should use the Workstation ArcInfo LOCKMANAGER command to manually set a lock on the data in order to avoid a situation that may cause data corruption. Refer to the *Using the Global Lock Manager* section for more information.

ArcInfo LIBRARIAN

ArcInfo LIBRARIAN was designed as a solution for multiple users editing data by storing data in a tiled coverage format. Updates (edits) are handled on a tile-by-tile basis. The map library is updated with a series of commands that are available at the ArcInfo LIBRARIAN prompt including PUTTILE, INSERT, and REPLACE.

These commands perform a variation of the same process, which is a combination of KILL, COPY, and RENAME. The consequences of accessing ArcInfo LIBRARIAN layers while running one of these commands is the same as outlined above for coverage data.

As with coverage data, commands that read the data will not affect ArcSDE for Coverages access. This includes the ArcInfo LIBRARIAN command GETTILE and all other commands that read ArcInfo LIBRARIAN data in ArcInfo software.

Shapefiles

Shapefiles cannot be edited with Workstation ArcInfo software but can be edited with Desktop ArcInfo or ArcView GIS and can be deleted and renamed by the operating system or ArcCatalog on the desktop. This section outlines the behavior of ArcSDE for Coverages when one of these occurs.

As with ARCEDIT editing coverages, if ArcSDE for Coverages is accessing a shapefile being edited with ArcView GIS, there are no perceptible problems until the shapefile edits are saved. While the edits are saved, the ArcSDE for Coverages server cannot locate the shapefile and returns "Underlying DBMS Error." Once the save process is completed, the ArcSDE client can access the layer without having to reconnect.

If you attempt to delete or rename a shapefile while ArcSDE for Coverages is reading it, behavior will differ between Windows NT and UNIX platforms. On Windows NT, the operating system will not allow files that are being accessed by a process (in this case, the ArcSDE for Coverages server process) to be deleted or renamed. When the ArcSDE server finishes its read, the shapefile can be deleted, and clients trying to access the layer pointing to that shapefile will get an "Underlying DBMS Error."

On UNIX, a shapefile can be deleted while ArcSDE for Coverages is accessing it. However, if any processes have the file open, the file will not be deleted until no processes have it open. An ArcSDE client will see the layer draw in its entirety, but when the client attempts to redraw, "Underlying DBMS Error" is returned.

Administration Strategies for ArcSDE for Coverages

Editing Strategies

It is clear from the information above that performing an ARCEDIT SAVE operation while the coverage is being read by ArcSDE for Coverages will likely result in data corruption. To avoid this situation, copy the coverage and edit the copy. Once edits are complete, replace the original coverage with the new one.

This brings us to the potential problems with COPY, KILL, and RENAME (and related ArcInfo LIBRARIAN commands). These commands can cause the ArcSDE for Coverages client application to either be locked out from the data or to lose its ArcSDE connection. To avoid this, coverages and ArcInfo LIBRARIAN tiles should only be replaced when you are sure that no one is accessing the coverage through ArcSDE for Coverages. You can ensure this by shutting down the server while the data is swapped out. Shutting down the server to update the database can be set up as an overnight process.

Administration Strategies

Another way to lock out clients from reading a layer is to unregister it with the ArcSDE for Coverages administration command "layerutil." Because this will cause the layer to disappear, clients who are reading the layer will get "Underlying DBMS Error" if they try to access the layer. If the layer is reregistered once the source coverage is replaced, the client application cannot continue as if nothing happened because the newly registered ArcSDE layer will not have the same layer ID.

Different client applications will react differently, but none will operate smoothly. Some clients will disconnect from the ArcSDE for Coverages server, while others will draw data inconsistent with the underlying source data. When performing layer administration that involves deleting an entire layer or part of its definition (i.e., removing access to some of its items), proceed only when no one is accessing the layer.

To do this, pause the server with the sdemon –o pause command, which will prevent new clients from connecting. Once the server is paused, you can wait until it is safe to replace the source data. This is either when all clients are disconnected or when you are sure that all users are not accessing the layer whose data you want to replace or modify. When you complete your modifications, you can again allow client connections to the server with the sdemon –o resume command.

Because the layerutil command requires a connection, you cannot administer layers while the server is paused. If you want to administer layers without clients accessing them, pause the server, wait until no one is connected, and shut down the server. Once the server is shut down, restart it with a new password that only you (the administrator) knows while you administer the layers. After your layer administration is complete, you can shut down the server again, restart it with your public password, and allow your clients to connect.

Using the ESRI Lock Manager with ArcInfo

Provided with ArcInfo 8.0.1 is the ESRI lock manager. Whenever you use an ArcInfo application that accesses coverages and shapefiles, a lock manager process is used to help prevent data corruption. By default, a local lock manager process is used to ensure multiple writes are not made to the same data set from two ArcInfo applications at the same time such as ArcToolbox™ and ArcCatalog™. No administration is required for the local lock manager.

The local lock manager only manages how applications running on one machine access coverages and shapefiles. If you want to share data between multiple users who access one local data location, a global lock manager is required to ensure only one person writes to a data set at a time.

Note: If simultaneous data update and ArcSDE access are not required in your organization, or the conflict avoidance strategies in the previous section are viable for your scenario, the global lock manager is not required for ArcSDE for Coverages.

Installing and Starting the ESRI Global Lock Manager on Windows NT

Installing and Starting Port Map

The global lock manager relies on remote procedure calls (RPCs) for client/server communication. RPC requires a port map to direct client RPC calls to the correct process such as the lock manager. A port map is not standard preinstalled software on Windows NT. Because it is considered a layered product, it is a user's responsibility to install one if necessary. A port map (portmap.exe) is supplied with ArcInfo and ArcSDE for Coverages and is located in %ARCHOME%\bin. You can use any third party port map.

To simplify installing the port map, make sure the executable is local to your host node. The person installing a Windows NT service must be a member of the Administrator group on the host node. The supplied port map runs as a Windows NT service—use the INST_PM command at the DOS prompt to install the executable as a service.

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```
C:\> inst_pm
 usage: inst_pm <full pathname>\portmap.exe
          to install portmap, or:
        inst_pm remove
             to remove it.
C:\> inst_pm c:\arcexe80\bin\portmap.exe
CreateService SUCCESS
```
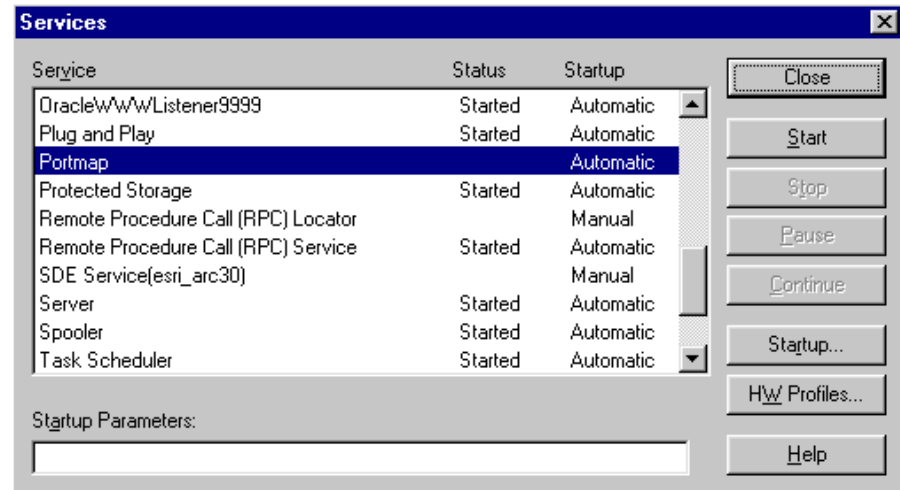

This installs the port map as a service on your system but does not start it. From the Start menu, select Control Panel from the Settings submenu. Double-click Services, select Portmap, and click the Start button. To change the start-up mode or other properties of the port map, click the Startup… button.

Installing and Starting the Global Lock Manager

The global lock manager can run either as an installed Windows NT service or as a console application from a DOS window. Running the global lock manager as a console application is less desirable because the user who starts the process must remain logged in. It is easier to run the global lock manager as a Windows NT service. The user who starts the global lock manager can log off the server node at any time without affecting the global lock manager process. In addition, you can manage the process with native Windows NT tools, which means you can start and stop the global lock manager with the click of a button or have the global lock manager start automatically when booting.

```
C:\> lockmgr
Usage: lockmgr INSTALL ~                      : Installs lockmgr as a
service.
                {MANUAL|AUTOMATIC|DISABLE} ~
                {ACCOUNT <account_name> {password}} ~
                {PORTMAP <portmap_path_name>}
             REMOVE                           : Removes the lockmgr
service.
C:\> lockmgr install account avdomain\andy
Please enter account password:
```

In the above example, "avdomain" specifies the network domain that the account name "andy" belongs to. If you do not specify a domain name, the command will look for a

local user account on the host node. If you leave your password out, you will be prompted for it, and the characters will not be echoed to the screen. Assuming everything is correct, the lockmgr install command will return

`Service has been successfully installed.`

Like port map, installing the global lock manager does not start it. From the Start menu, select Control Panel from the Settings submenu. Double-click Services, select ESRI Lock Manager Service Version 8.0.1, and click the Start button. To change the start-up mode and other properties, click the Startup… button.
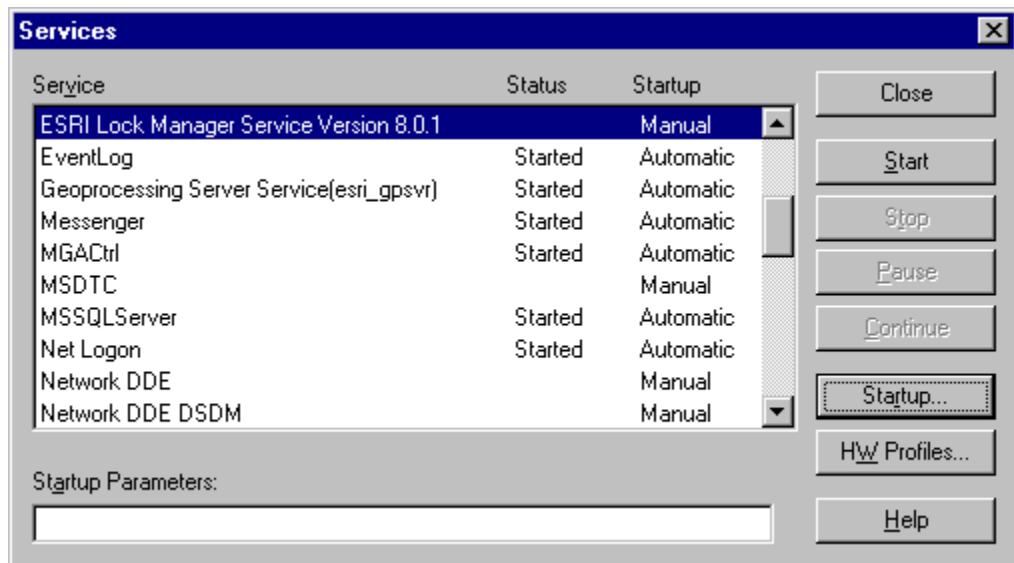
No arguments are required to install the global lock manager as a Windows NT service with the lockmgr install command. If you do not specify any arguments, the global lock manager installs without a required start-up account, and the start-up mode defaults to manual. To set the start-up account select ESRI Lock Manager Service Version 8.0.1 on the Services menu, click the Startup… button, and fill in the Log On As: This Account dialog boxes as shown below.

When the service is started, it will look for a file in the %ARCHOME%\sysgen directory called default.flm. If the file does not exist, one will be created with the following contents:

```
C:\> type %ARCHOME%\sysgen\default.flm
REDARROW
0x40000001
801
```

REDARROW is the name of the machine running the service, 0x40000001 is the default port address on which the global lock manager will communicate, and 801 is the version number.

The global lock manager can run on any machine. When ArcInfo or ArcSDE for Coverages is started, it will look in the %ARCHOME%\sysgen directory for the default.flm file for the machine the global lock manager is running on and how to communicate with it. If the application cannot find the default.flm file or the global lock manager is not running, the application will use a local lock manager.

Installing and Starting the ESRI Global Lock Manager on UNIX

On Compaq Digital UNIX, the global lock manager executable is located in $ARCHOME/bin.

The usage for the lockmgr command is

```
Usage:  lockmgr TEST                        : Tests if server is running
                HALT                        : Stops the server
```

To start the global lock manager service, type the following:

```
% $ARCHOME/bin/lockmgr
File Lock Manager service Version 8.0    (Sun Jul 4 23:49:38 PDT 1999)
started.
```

When the service is started, it will look for a file in the $ARCHOME/sysgen directory called default.flm. If the file does not exist, one will be created with the following contents:

```
% cat  $ARCHOME/sysgen/default.flm
ultra
0x40000001
80
```

Ultra is the name of the machine running the global lock manager, 0x40000001 is the default port address on which the global lock manager will communicate, and 801 is the version number.

The global lock manager can run on any machine and not necessarily the ArcSDE server or where the data resides. When ArcInfo or ArcSDE for Coverages is started, it will look in the $ARCHOME/sysgen directory for the default.flm file for the machine the global lock manager is running on and how to communicate with it. If the application cannot find the default.flm file or the global lock manager is not running, ArcSDE for Coverages will run without file protection and ArcInfo will use a local lock manager.

To stop the lock manager, use the "halt" option.

```
% lockmgr halt
```

Using the Global Lock Manager

To test if a global lock manager is running, you can use the "lockmgr test" command. If a global lock manager is running on the server specified by the default.flm file located in your $ARCHOME/sysgen directory, you will get the following message:

```
F:\>lockmgr test
Lockmgr service is running on REDARROW using ID 0x40000001 Version 80
```

If the global lock manager is not running, you will get

```
F:\>lockmgr test
No lockmgr service running on REDARROW using ID 0x40000001 Version 80
```

If a default.flm file does not exist in the ARCHOME/sysgen directory (i.e., the global lock manager has never been started for this ArcInfo or ArcSDE for Coverages installation), you will get the following message:

```
F:\>lockmgr test
Unable to read ARCHOME/sysgen/default.flm
```

Once the global lock manager process is running, if ArcInfo, ArcView GIS, or the ArcSDE for Coverages server is started and the default.flm file contains the correct information, the application will be operating in a "safe" mode. Requests for reading, writing, and editing data will pass through the global lock manager to avoid conflicts.

The global lock manager allows five types of locks.

- READ locks
- WRITE locks
- EDIT locks
- SCHEMAREAD locks
- SCHEMAWRITE locks

An application can set a READ lock on a shapefile, coverage, or ArcInfo LIBRARIAN layer if there are no current WRITE or SCHEMAWRITE locks. To set a WRITE lock, no READ, WRITE, or SCHEMAWRITE locks can already exist on the data.

SCHEMAREAD and SCHEMAWRITE locks are used by ArcInfo desktop when reading and writing to coverages and shapefiles.

Each application communicates with the global lock manager to place the appropriate lock on the data it is trying to access or modify. What type and at what time an application places a lock is different for each application.

Note: When multiple users are locking the same data, ensure all users are accessing the data using the same path. The global lock manager uses the complete file name including its UNC path when checking for existing locks. If one person accesses a data set using a shared directory such as **\\redarrow\data\testcover,** and another person accesses the same data using a shared drive such as **\\redarrow\c\data\testcover,** the global lock manager will not see these as the same data set. Both users must use the same path when accessing the data.

ArcInfo and ArcSDE for Coverages

When you begin your ArcInfo session, if a global lock manager is running, you will automatically be connected to it.

If the global lock manager is shut down while you are in your ArcInfo session, you will receive a message on your console when a command that accesses the global lock manager cannot connect to it.

```
Arcplot: layer define 1 cover property polygon
Arcplot: layerdraw 1 2 outline
Error communicating to ESRI Lock Manager. Locking will now be disabled.
```

You can continue to work as normal, but you are not communicating with the lock manager, and you are not in "safe" mode. If the global lock manager is restarted, you will have to restart your ArcInfo session to reconnect with the lock manager.

Coverages can be modified in various ways such as in ARCEDIT and the KILL and RENAME commands in ArcInfo. Likewise, coverage data can be read in ArcInfo by such commands as the various LAYER-related commands in ARCPLOT™ software.

With the lock manager, the only data-reading commands that will communicate with the global lock manager and that will therefore be safe will be the LAYER-related commands in ARCPLOT. When one of these commands (i.e., LAYERDRAW) is

executed, if the layer is defined from a coverage, shapefile, or ArcInfo LIBRARIAN layer and ArcInfo is communicating with the lock manager, ArcInfo will attempt to put a READ lock on the source data. If ArcInfo is successful at placing the READ lock, the command will execute as normal, and once finished the READ lock will be released.

If another user is writing to the data, a WRITE lock exists on the data, so the user executing the LAYERDRAW command cannot place a READ lock. At this point, ArcInfo attempts to establish a READ lock on the layer every second. The default waiting period is zero seconds, meaning that ArcInfo will return an error if its first attempt to establish a lock is unsuccessful.

```
Arcplot: layer define l cover property polygon
Arcplot: layerdraw l 2 outline
Datasource for l is being updated, cannot access at this time
Cannot start scan
```

The default waiting period can be changed by setting the ESRILOCKREADTIMEOUT environment variable before starting ArcInfo. Set this variable to the number of attempts at getting a READ lock (which will correspond to seconds). If ArcInfo is initially unsuccessful at getting a lock, a message is printed to the console indicating that it is waiting for a lock. Once the value of ESRILOCKREADTIMEOUT is reached, an error is returned.

```
Arcplot: layer define l cover property polygon
Arcplot: layerdraw l 2 outline
Waiting for a read lock on F:\WORKING\LOCKMGR\PROPERTY
Datasource for l is being updated, cannot access at this time
Cannot start scan
```

If set to zero, the behavior will match the default. If the variable is set to -1, ArcInfo will try to get a READ lock indefinitely. To set the variable

On Windows NT:

```
C:\> set ESRILOCKREADTIMEOUT=60
```

On UNIX:

```
% setenv ESRILOCKREADTIMEOUT 60
```

Modifying Coverages

While the LAYER-related commands are the only READ lock-enabled commands in ArcInfo, a number of commands that update and modify data have been made safe by making them communicate with the lock manager. The most obvious concern is with ARCEDIT.

ARCEDIT is ArcInfo software's editing environment for coverages. As discussed above, traditionally one user could not access a coverage while another user was editing it. Now that ARCEDIT communicates with the lock manager, other applications that communicate with the global lock manager can access the same data without crashing or corrupting data.

When editing a coverage, no locks are placed until the SAVE command is issued. When you run the SAVE command, ARCEDIT will try to place a WRITE lock on the coverage. If any READ locks exist, ARCEDIT attempts to establish a WRITE lock on the layer every second. The default waiting period is zero seconds, meaning that ArcInfo will return an error if its first attempt to establish a lock is unsuccessful.

```
Arcedit: save
Saving changes for F:\WORKING\PROPERTY
Cannot set write lock on F:\WORKING\PROPERTY
```

The default waiting period can be changed by setting the ESRILOCKREADTIMEOUT environment variable before starting ArcInfo. Set this variable to the number of attempts at getting the WRITE lock (which will correspond to seconds). If ArcInfo is initially unsuccessful, a message is printed to the console indicating that it is waiting for a lock. Once the value of the ESRILOCKWRITETIMEOUT variable is reached, an error is returned.

```
Arcedit: save
Saving changes for F:\WORKING\PROPERTY
Waiting for a write lock on F:\WORKING\PROPERTY
Cannot set write lock on F:\WORKING\PROPERTY
```

If set to zero, the behavior will match the default. If the variable is set to -1, ARCEDIT will try to establish a WRITE lock indefinitely.

On Windows NT:

```
C:\> set ESRILOCKWRITETIMEOUT=60
```

On UNIX:

```
% setenv ESRILOCKWRITETIMEOUT 60
```

Note that only the SAVE command in ARCEDIT is safe. The CLEAN and BUILD commands in ARCEDIT do not communicate with the lock manager. There is also no protection from two users editing the same data at the same time.

As previously mentioned, several other commands that write data have integrated lock management. These ARC commands are

BUILD
CLEAN
GENERATE
KILL
RENAME
RENODE

When one of these commands is run against a coverage, the global or local lock manager attempts to place a WRITE lock before the command begins executing. The behavior is the same as ARCEDIT SAVE. If a WRITE lock is not immediately acquired, the global or local lock manager will retry for the duration specified by the ESRILOCKWRITETIMEOUT environment variable. While executing, because a

WRITE lock exists, if you attempt to read the data in an ARCPLOT session with one of the LAYER commands, the global or local lock manager cannot place a READ lock until the WRITE lock is released.

Arc: **clean property**
```
Waiting for a write lock on F:\WORKING\PROPERTY
Cleaning F:\WORKING\PROPERTY
 Sorting...
 Intersecting...
 Assembling polygons...
```

In this release of the lock manager, you are not protected from two users trying to edit the same coverage at the same time. You still must make the same precautions when editing coverages as you always have. The global lock manager will only protect a single editor or modifier from multiple readers and vice versa.

Modifying ArcInfo LIBRARIAN Layers

ArcInfo LIBRARIAN layers are modified with the commands PUTTILE, REPLACE, and INSERT. These commands have been made safe via communication with the lock manager. When a LAYER command attempts to read an ArcInfo LIBRARIAN layer, it will place a READ lock on the entire layer. If another user wants to replace a tile with REPLACE or perform a PUTTILE or INSERT, these commands will attempt to place a WRITE lock on the layer.

Like other safe commands, if PUTTILE, REPLACE, or INSERT cannot get a WRITE lock, the global lock manager retries for the duration specified by the ESRILOCKWRITETIMEOUT environment variable.

If PUTTILE, REPLACE, or INSERT has acquired a WRITE lock and is updating a tile in the ArcInfo LIBRARIAN layer, and another user attempts to access the layer, they will not be able to place a READ lock until the PUTTILE, REPLACE, or INSERT command is complete.

ArcSDE for Coverages

ArcSDE for Coverages also communicates with the ESRI lock manager. Because it is a read-only access method to coverages, shapefiles, ArcStorm, and ArcInfo LIBRARIAN layers, it will only attempt to place a READ lock on the data types (except ArcStorm).

To make ArcSDE for Coverages communicate with the lock manager, once the global lock manager is running on any server, not necessarily the same server as ArcSDE for Coverages, make sure the default.flm file is in the ARCHOME/sysgen directory. If the file is present and has the correct information for communicating with the lock manager, ArcSDE for Coverages will run in safe mode.

ArcSDE for Coverages only reads data, so if you want a lock waiting period, set the environment variable ESRILOCKREADTIMEOUT. Set this variable in the environment where the ArcSDE for Coverages server is started. In the case of Windows NT, it must be set as a system environment variable with the control panel.

Whenever the ArcSDE for Coverages server accesses data stored in a coverage, ArcInfo LIBRARIAN, or shapefile, it will attempt to place a READ lock on the data. If another user is updating that data with ArcInfo or ArcView GIS and has a WRITE lock on the

data, ArcSDE for Coverages will continuously attempt to get a READ lock for the period of time specified by the ESRILOCKREADTIMEOUT environment variable. If it cannot, ArcSDE for Coverages returns this SDE error to the client application.

SE_LAYER_INUSE (-21)

If the user is connected to the ArcSDE for Coverages server from a client application such as ArcInfo or ArcView GIS and attempting to access a layer for drawing or listing attributes, there will be a pause. This pause will last until a READ lock is set on the source data or the maximum amount of time specified by ESRILOCKREADTIMEOUT, whichever is shorter. If the ESRILOCKREADTIMEOUT time is exceeded, the client application will receive the SE_LAYER_INUSE error.

If the global lock manager is shut down while the ArcSDE for Coverages server is running, the server is no longer communicating with the lock manager and is no longer in a safe mode. The ArcSDE for Coverages server will continue running without communicating with the lock manager. If the global lock manager is restarted, ArcSDE for Coverages must be shut down and restarted.

ArcView GIS

ArcView GIS has its own multiuser file-locking system, which is an optional installation in ArcView GIS 3.x. ArcView GIS contains utilities for editing shapefiles. If you are editing shapefiles while serving them with the ArcSDE for Coverages server or accessing them through the LAYER commands in ArcInfo, the ArcView GIS lock manager can be used to reduce conflict between data readers and data writers.

ArcInfo and ArcSDE for Coverages can use the ArcView GIS lock manager. If the default.flm file located in the ARCHOME/sysgen directories matches the default.flm file that the ArcView GIS lock manager is running on and the client machine can communicate with the ArcView GIS lock manager server, ArcInfo and ArcSDE for Coverages will operate in safe mode.

Running the ArcView GIS lock manager will protect against ArcInfo writing to coverages or ArcInfo LIBRARIAN layers or reading coverages, ArcInfo LIBRARIAN layers, and shapefiles while they are being read by ArcSDE for Coverages or the ARCPLOT LAYER commands. It will also protect ArcView GIS from writing to shapefiles while they are being read by ArcSDE for Coverages or the LAYER commands.

The ArcView GIS lock manager will not protect against an ArcView GIS session reading a coverage or an ArcInfo LIBRARIAN layer directly while ArcInfo is writing to the data. It also will not protect against the operating system deleting or renaming files while ArcView GIS is reading them. It will, however, protect against reading coverages and ArcInfo LIBRARIAN layers through ArcSDE for Coverages while ArcInfo is writing to the files.

If you require a simultaneous update of shapefiles with ArcView GIS and shapefiles reading with either ArcInfo or ArcSDE for Coverages, you need to use the ArcView GIS

lock manager. If you do not need to update shapefiles, you can use either the ESRI lock manager or the ArcView GIS lock manager.

To install and configure the ArcView GIS lock manager, see your ArcView GIS documentation.